Dr. J. H. Packard, Philadelphia.
Prof. John F. Frazer, Philadelphia.
Rev. Henry S. Osborn, Easton, Penna.

And the Society was adjourned.

Stated Meeting, February 1st, 1867.

Present, seventeen members.

Dr. Wood, President, in the Chair.

Judge Cadwalader, a recently elected member, was presented and took his seat.

Letters were read from Hon. Charles Sumner, dated January 26, 1867, and from Dr. Harrison Allen, January 31, 1867, acknowledging the receipt of notice of their election, and acceptance of membership. Also, from William Procter, Jr., Corresponding Secretary of the Philadelphia College of Pharmacy, dated January 31, announcing the transmission of thirty-seven volumes of the American Journal of Pharmacy; and from the Historical Society of Philadelphia, acknowledging receipt of publications.

On motion of Judge Sharswood, the thanks of the Society was tendered to the College of Pharmacy for so valuable a contribution to the Library; also ordered, that the College of Pharmacy be placed on the list of Corresponding Societies.

Donations to the Library were announced as follows: From the Royal Norwegian University at Christiania; from the Literary and Historical Society of Quebec; from the Public Library of Boston; from the Editors American Journal of Sciences and Arts, and the Franklin Institute; from the New Jersey Historical Society; from the Wisconsin Historical Society, and the College of Pharmacy of Philadelphia.

The death of G. W. Featherstonhaugh, a member, was announced by Thomas P. James, as having occurred September 28, 1866, in his 80th year.

Mr. P. E. Chase made an oral communication on the laws which regulate the transmission and distribution of solar heat.

Prof. Dove, in the discussions by which he demonstrated the existence of consistent and clearly-marked annual barometric tides, has well set forth the importance of broad meteorological generalizations. It is, evidently, only by a comparison of observations made in all quarters of the globe, that we can hope to find the fundamental laws which regulate periodical changes in the atmosphere, and thus become properly qualified for the study of local and exceptional disturbances.

It seems somewhat remarkable, that, in a science so eminently statistical as meteorology, the formidable mass of already accumulated observations has been followed by such meagreness of practical results. Humboldt and Dove have admirably developed the system of isothermal lines, the latter having widely tracked it through its theral, chimenal, monthly, and annual ramifications; but these lines are so largely controlled by ocean currents, mountain ridges, and other local disturbances, that they give us little help towards ascertaining the laws which regulate the distribution of heat over the earth's surface. Mayer believed that the normal mean temperature varies as the square of the cosine of latitude. The error of his formula was soon demonstrated, and I am not aware that any one has proposed a substitute. The active members of the various meteorological societies are industriously engaged in the solution of numerous special problems, and the indefatigable host of observers are evermore adding to the stores of material, but the laborers are too few for the harvest. We are still entirely ignorant of the degrees of influence exerted by the various well-known climatic causes in determining the mean temperature of the several seasons and of the entire year.

The principal elements of general thermometric variation are: 1, the heat imparted by the sun; 2, terrestrial absorption and radiation; 3, atmospheric currents. Of these three agencies, the first is, in one sense at least, the chief, since it is the one on which the others depend; the second is mainly instrumental in modifying the other two, and especially in retarding the daily and yearly changes; the third is a subject of hourly experience, and its meteorological importance is now generally recognized.

The amount of heat which is received directly from the sun, evidently varies as the cosine of the zenith distance, or the sine of the

sun's altitude. In the daily distribution of temperature, this is the most important element, as is evident from the tabular comparisons in my communication of September 21, 1866.* Absorption and radiation proceed at nearly uniform rates, therefore it may be assumed that their effects are approximately proportioned to the time during which they operate. The average general variation which is due to the influence of the winds is a difficult point to determine, but the present investigation has led me to believe that it may be properly measured by the difference of *arc* (instead of the *sine* difference), of the sun's meridian altitude. My reasons for this inference are the following: 1, the general average temperature of the year often appears to vary very nearly as the arc in question, and it seems unreasonable to suppose that a variation of this character can be attributable either to the heat communicated by the sun, or to terrestrial absorption and radiation; 2, the tendency of the air, so far as it is determined by the direct heat of the sun, is at all times towards that point of the earth's surface at which the sun is vertical, and we may readily believe that the thermal effect of the current should be proportional to the distance, measured on a great circle of the earth, through which the air would be obliged to move in order to reach the sub-solar point. This distance evidently varies as the *arc* of the sun's zenith-distance.

We have, then, three natural standards for admeasurement, by means of which, if we rightly eliminate special and limited perturbations, we may perhaps be able to determine the predominating influence, in many cases both of local and of general thermal disturbance. In order to institute as broad a comparison as possible, I have adopted a method of elimination which is substantially the same as the one used in my previous physical investigations, and which may be illustrated by a single example.

The average monthly temperatures of the United States, as deduced from Prof. Coffin's reductions of the "meteorological observations, made under the direction of the United States Patent Office and the Smithsonian Institution, from the year 1854 to 1859 inclusive,"† appear to be as follows:

January, 28.352; February, 30.873; March, 39.049; April,

* *Ante*, pp. 261–269. See especially the observations at St. Bernard, and the general average of Table I, p. 267.

† The reductions referred to, embody the results of more than a million observations, made by nearly a thousand observers, at about eight hundred different stations.

49.744; May, 60.902; June, 69.780; July, 75.640; August, 71.754; September, 65.643; October, 53.922; November, 42.350; December, 32.132. January and July are the months of extreme temperature, terrestrial absorption and radiation retarding the periods of maximum heat and cold so that they fall in the months following the solstices. Averaging the temperatures at equal intervals from January (taking the mean temperature of December and February, of November and March, &c.), we get the following results:

Months, from Jan., . .	0	1	2	3	4	5	6
Average Temp., .	28.352	31.502	40.699	51.833	63.272	70.767	75.640
Monthly Diff., . .	. .	3.150	12.347	23.481	34.920	42.415	47.288
Ratio of do. . .	. .	.067	.261	.497	.738	.897	1.000
Ratio of Difference of Zenith distance,	. .	.069	.255	.500	.745	.931	1.000

The second of the above series of ratios (that of the difference in the arc of the sun's zenith distance), is based upon the following estimate of the average monthly increase of solar altitude, at all places in the temperate zones:

Mo., from winter solstice, . .	1	2	3	4	5	6
Increase of sol. altitude,	3°½	12°	23°½	35°	43°¾	47°
Ratio of increase, . . .	.069	.255	.500	.745	.931	1.000

If we allow about twenty-four days for the cumulative effects of increasing heat and cold, these ratios become properly comparable with the monthly ratios of temperature-variation.

The data for the following table, with the exceptions specified in the foot-notes, were drawn from Herr Dove's sixth paper, "Über die nicht periodischen Veränderungen der Temperatur-Vertheilung auf der Oberfläche der Erde" (Memoirs of the Berlin Academy of Sciences, for 1858), and from his local corrections for periodic and non-periodic variations, as inserted by Prof. Guyot, in the V. series of "Tables, Meteorological and Physical, prepared for the Smithsonian Institution," third edition. In determining the general ratios, all observations for incomplete years were discarded, and in some instances, where the stations involved were very numerous, I also

omitted such records as extended over a period less than from three to five years. The comparison is confined to the extra-tropical regions, because the double maxima in the torrid zone would have complicated the results too much for my present purpose. The differences are counted from January in the Northern, and from July in the Southern hemisphere. The first series of ratios for the Northern hemisphere is computed from the monthly averages at 217 stations, recorded in Dove's V. table, "Abweichungen, 1845–1855, bezogen auf Mittel längerer Reihen." At 206 of the stations the observations covered periods of from ten to seventy-seven years, the general average period of the entire table being upwards of twenty-two years. The second series is obtained by combining the more limited ratios of the several countries, a method which gives undue weight to the European observations. The third series is based on the respective European, Asiatic, and North American averages, allowing to each grand division a weight corresponding to the portion of its area which is embraced in the temperate zone. The ratios of the Southern hemisphere (where the stations are few in number, and confined to the sea-coast), are calculated by the first method.

General and Local Ratios of Monthly Temperature-Differences.

Difference of Time, months, . .	1	2	3	4	5	6
Ratios of sines, ...	.076	.284	.545	.784	.946	1.
" " arcs, ...	.069	.255	.500	.745	.931	1.
N. Hemisphere, series I, .	.076	.259	.512	.755	.935	1.
" " II, .	.064	.225	.499	.729	.935	1.
" " III, .	.079	.270	.517	.755	.929	1.
S. Hemisphere, ...	.077	.281	.538	.763	.938	1.
Arctic Regions, ...	.071	.231	.479	.733	.934	1.
Europe, ...	.069	.239	.501	.738	.938	1.
Asia, ...	.097	.274	.535	.769	.934	1.
N. America, ...	.055	.279	.494	.741	.917	1.
S. America, ...	.077	.275	.501	.724	.936	1.
Africa, ...	.088	.267	.537	.761	.938	1.
Australia, ...	.081	.313	.618	.801	.913	1.
United States,[a]	.054	.256	.500	.743	.904	1.
Russian Empire, . . .	.097	.262	.512	.758	.935	1.
Siberia, ...	.099	.265	.543	.763	.938	1.
Russia, ...	.076	.258	.506	.749	.935	1.
Scandinavia, ...	.057	.183	.430	.675	.904	1.

[a] Mean of Dove, Coffin, and Guyot.

General and Local Ratios, &c.—*Continued.*

Difference of Time, months, . .	1	2	3	4	5	6
G. Britain and Ireland, .	.068	.205	.445	.720	.939	1.
Holland, ...	.008	.149	.479	.721	.947	1.
France, ...	.073	.210	.507	.705	.935	1.
Spain and Portugal, . .	.042	.216	.470	.682	.928	1.
Italy,.	.041	.231	.511	.691	.919	1.
Mediterranean Coast, .	.079	.269	.505	.735	.952	1.
Austria, ...	.066	.234	.541	.762	.951	1.
Prussia, ...	.096	.216	.520	.753	.955	1.
Wurtemburg, ...	.025	.215	.489	.750	.935	1.
Germany, ...	.088	.241	.541	.777	.982	1.
Switzerland, ...	.071	.226	.524	.727	.951	1.
N. Africa, ...	.095	.267	.526	.726	.888	1.
S. Africa, ...	.082	.268	.548	.797	.988	1.
New Zealand,[b]	.026	.201	.434	.829	.895	1.
Washington, ...	.063	.259	.516	.751	.925	1.
Philadelphia, ...	.031	.231	.471	.733	.926	1.
Toronto,[c]	.085	.259	.517	.727	.927	1.
New Haven,[d]	.059	.256	.498	.740	.932	1.
Albany,[e]	.057	.261	.511	.761	.936	1.
Salem, Mass.,[f]	.077	.260	.495	.734	.924	1.
Godthaab, ...	.089	.216	.458	.732	.934	1.
Sitka, ...	.148	.252	.497	.729	.953	1.
Tiflis, ...	.134	.279	.567	.751	.928	1.
Pekin, ...	.054	.249	.532	.778	.927	1.
Nertchinsk, ...	.065	.308	.587	.808	.942	1.
Barnaul, ...	.049	.263	.552	.753	.940	1.
Venice, ...	.099	.275	.531	.736	·945	1.
Palermo, ...	.054	.197	.424	..685	.906	1.
Milan, ...	.105	.302	.537	.770	.936	1.
Gibraltar, ...	.074	.232	.513	.704	.890	1.
Geneva, ...	.097	.274	.514	.771	.943	1.
St. Bernard, ...	.154	.262	.483	.755	.932	1.
Vienna, ...	.094	.271	.534	.790	.951	1.
Ratisbon, ...	.117	.293	.564	.823	.959	1.
Stuttgard, ...	.138	.297	.536	.784	.941	1.
Carlsruhe, ...	.114	.278	.531	.793	.945	1.
Munich, ...	.092	.209	.511	.729	.948	1.
Berlin, ...	.106	.250	.508	.777	.946	1.
Prague, ...	.112	.248	.536	.754	.947	1.
Paris, ...	.120	.286	.515	.784	.946	1.
Brussels, ...	.125	.275	.528	.780	.973	1.
Zwanenburg, ...	.128	.259	.517	.787	.948	1.
London, ...	.120	.242	.481	.747	.936	1.
Dublin, ...	.086	.173	.370	.722	.953	1.
Kinfaun's Castle, . .	.108	.234	.445	.706	.917	1.
Copenhagen, ...	.073	.200	.462	.742	.944	1.
Tornea, ...	.079	.227	.464	.690	.908	1.
Catharinenburg, . . .	.007	.266	.518	.748	.912	1.
St. Petersburg, ...	.082	.230	.471	.714	.924	1.
Moscow, ...	.107	.248	.505	.758	.942	1.
Odessa, ...	.087	.282	.518	.735	.925	1.
Cairo, ...	.043	.273	.544	.755	.971	1.
Capetown, ...	.050	.222	.524	.755	.967	1.
Melbourne, ...	.094	.335	.519	.774	.938	1.
Rio Janeiro, ...	.065	.234	.600	.749	.937	1.
Valparaiso, ...	.076	.244	.456	.716	.940	1.

[b] One year's observations at Auckland.
[c] Lefroy.
[d] Loomis and Newton, 86 years.
[e] Guyot, 19 years.
[f] Guyot, 42 years.

The averages at individual stations often present considerable variations, even when different decades, or longer periods, are compared. It is, therefore, uncertain to what extent the laws of limited local change are manifested by this table, but in the extended groupings of countries, divisions, continents, and hemispheres, I think the indications of the ratios can be safely trusted.

By taking the differences from month to month (instead of the aggregate increase from the winter solstice), we may form some idea of the change at different periods of the year, in the relative climatic influence of the sun and the winds. The method of comparison may be readily understood by referring to the following table. The small figures denote the ratio (^{1} of sines, or ^{2} of arcs) to which the increment most nearly approximates. The sums of the monthly differences give the aggregate ratios of the preceding table. The first series of means is derived directly from the tabular numbers, by allowing equal weight to each; the second allows to each ratio a weight corresponding to the territorial area.

MONTHLY RATIOS OF CHANGE IN SINE, ARC, AND TEMPERATURE.

	Months, ...	1st.	1st to 2d.	2d to 3d.	3d to 4th.	4th to 5th	5th to 6th.
	Sines,*	76	208	261	239	162	54
	Arcs, ...	69	186	245	245	186	69
TEMPERATURE.	Europe, . . .	69^2	170^2	262^1	237^1	200^2	62^2
	Asia, ...	97^1	177^2	261^1	234^1	165^1	66^2
	N. America, . .	55^2	224^1	215^2	247^2	176^2	83^2
	S. America, . .	77^1	198^1	226^2	223^2	212^2	64^2
	Africa, ...	88^1	179^2	270^1	224^1	177^2	62^2
	Australia, . . .	81^1	232^1	305^1	183^1	112^1	87^2
	I. Mean, . . .	78^1	197^2	256^1	225^1	175^2	71^2
	II. Mean, . . .	82^1	191^2	254^1	229^1	175^2	69^2

These comparisons seem to warrant the following inferences, all of which are confirmed by a more extended and minute examination, as well as by other considerations.

1. Taking into view the entire land surface of the globe and the entire range of the year, the direct heat of the sun, and the induced aerial currents appear to be about equally instrumental in determining fluctuations of temperature.

* The sines employed in each table are merely the sines of the excess of meridian altitude above the minimum, and not the increment of the sine of least meridian altitude. If the latter had been used the number of ratios approximating most nearly to the differences of arc would have been much greater.

2. The influence of the winds is most marked in the Northern and Western hemispheres; that of solar obliquity in the Southern and Eastern hemispheres.

3. Where the sun's rays are least intense (as in the Polar Regions), and where the winds are most variable, the ratios exhibit the nearest parallelism to the increments of arc; but where the winds are most uniform (in and near the region of monsoons) they correspond more closely with the sinal increments.

4. The general changes of temperature at midwinter, and at the equinoctial seasons (when the sun's declination is changing most rapidly), are most dependent upon the local solar heat; the midsummer changes are more subject to the influence of the winds.

5. The greatest conflict of opposing forces occurs during the sun's passage between the comparatively wind-governed Northern hemisphere and the sun-governed Southern hemisphere. The conflict is manifested in the spring and autumn rains.

6. The closest and most general approximation of ratios is shown in the monthly temperature-change at midsummer, which (in the II. mean), corresponds precisely with the change of arc.

Dr. Hayden spoke of the geographical distribution of plants, and referred to a number of species which are considered as exotics in this part of our country, but indigenous in regions west of the Mississippi.

Dr. Hayden said that the reading of a remarkable volume, recently published in England, had suggested some remarks in regard to the geographical distribution of the Flora and Fauna of the country west of the Mississippi. The book referred to is entitled the "Geographical Distribution of Mammals," by Andrew Murray. He had noticed a few plants in the Valley of the Missouri, which are undoubtedly indigenous there, but they have always been, and are regarded now as introduced east of the Mississippi.

1. *Portulacca oleracea:* Nuttall, in his genera of North American plants, says, "Indigenous on the saline and denudated plains of the Missouri, a plant common to every part of the globe." Gray, "Common in cultivated and waste grounds, naturalized from Europe." Dr. Darlington, "Undoubtedly an introduced plant here." Dr. Gray, in one of his later works, says, it is undoubtedly wild in Arkansas and Texas. Dr. Torrey says, that in the Atlantic States it

is undoubtedly a naturalized plant. Dr. Hayden has seen it in many localities in the Upper Missouri, where it could not have been otherwise than indigenous. It occurs in barren and saline places, in soil composed mostly of the clays of the Fort Pierre group, No. 4, cretaceous. It grows sparingly near the mouth of the Teton River, about four miles below Fort Pierre, in the Valley of White River, near the "Mauvaises Terres," in the Valley of the Niobrara River, near the mouth of Rapid River. It also grows quite abundantly on and around the rock exposures of the red quartzites of Dakota, in the Valley of James River, Vermilion, at Sioux Falls, and the Red Pipestone quarry. It does not grow as abundantly or as luxuriantly in any of these localities, as in our gardens and cultivated grounds.

2. *Achillea millefolium*, regarded by Dr. Darlington and Elliott as naturalized from Europe. Dr. Hooker (Flora Boreali Americana), says, "This plant is distributed throughout the British possessions, from Lake Huron to the Arctic Sea, and from the Atlantic to the Pacific Ocean." In the Northwest it is variable, sometimes with short woolly leaves, and at other times long lower ones, a foot long and three inches in diameter. On account of its more woolly character, it has been called *A. lanosum* by Nuttall, but Dr. Torrey does not recognize it as distinct. Beck, in his "Botany of the Northern States," 1848, says, "It is introduced and extensively naturalized from Arctic America to Oregon and Mexico." He does not consider it indigenous. It was found by Stansbury in the islands of Salt Lake. (Report, page 391.) Dr. Torrey, in "Marcy's Report," states that it is found on the upper tributaries of the Red River. It is the woolly form that occurs almost exclusively west of the Mississippi. It is found distributed almost universally over the broad grassy plains of the Upper Missouri. It does not grow in masses or thick bunches, as about houses and cultivated places east of the Mississippi, but usually with a single stalk, or at most four or five from one root. It would seem to be, without doubt, indigenous in the West.

3. *Humulus lupulus*.—"This plant, though cultivated (*i. e.*, the pistillate one) in almost every garden, is undoubtedly indigenous along our streams. The pistillate plant, in cultivation, being usually remote from the staminate, I think the ovaries are commonly abortive." (Flora Cestrica, page 287.)

Nuttall, in "Memoirs of the Academy of Natural Sciences," 2d series, page 181, calls it *H. Americanus*, and says, "I have ven-

tured, I think, on sufficient grounds to separate the American from the European species. Found as it is in the uncultivated interior of the continent, beyond the reach of inhabitants, our plant must necessarily be indigenous. I have compared the present with the foreign plant with some attention, and can in all cases readily distinguish them by their foliage. In the American plant, whatever be the other variations of the leaf, the attenuated points are toothed nearly to the extremity. In the European, the summit of the leaf is abruptly toothed. In the mature plant, the male flowers appear to be smaller, and the scales of the cones are likewise acuminate. In some specimens, as in the European plant, the upper leaves are simply cordate and entire, but in all cases the denticulations are smaller and more numerous." Dr. Gambel found the hop in the Rocky Mountains, on the line of Mexico, growing most luxuriantly. From the various reports of travellers, it seems to be widely distributed throughout the country west of the Mississippi. In the broad bottoms of the Valley of the Missouri River, it grows in the greatest luxuriance twining upon the largest trees, and producing its ament-like fruit in the greatest quantities. It is found in almost every ravine and valley of a stream from the foot of the mountains to the Mississippi. A brewer at the mouth of the Niobrara, Dakota Territory, has attempted to utilize it with some success.

4. *Plantago major*, is considered in the Flora Cestrica as truly a foreigner, a naturalized foreigner, remarkable for accompanying civilized man, growing along his footpaths, and flourishing around his settlements. Introduced from Europe according to Beck. Dr. Richardson finds it from Lake Huron to latitude 68°. It has also been found in Newfoundland and Labrador. De Schweinitz says, there is no place where it is not introduced. Along the Missouri River, about the trading-posts, and along some of the principal thoroughfares of the West, this plant is occasionally seen, but seldom or never observed in the interior remote from the haunts of men. It was observed in 1859 on the wooded bottoms of the Missouri River, between Fort Clark and Fort Pierre, at least two hundred miles from any human habitation, under circumstances such as to lead one to suspect that it might be indigenous, but it is hardly probable.

The climate of the Upper Missouri district is somewhat peculiar. There seems to be what may be called two seasons, a wet and a dry season. The wet season usually commences about the middle of March, and continues until the middle of May. During this period the rains are frequent and severe, sometimes continuing for thirty

days in succession. The dry season commences about the middle of July, and usually continues through the autumn and sometimes a portion of the winter. Occasionally heavy storms of short duration occur in September and October, but usually the weather is delightful, the sky being sometimes for weeks with scarcely a cloud. Probably three-fourths of the plants of the country are in blossom during the months of May and June and the first half of July. During the month of September the ground becomes parched by drought, and very little vegetation clothes the prairies, and everything presents the appearance of desolation; very few flowers are in bloom, except now and then a composite plant. The greater portion of the Upper Missouri flora belongs to the great families of *Cruciferæ*, *Leguminosæ*, *Compositæ*, *Chenopodiaceæ*, and *Gramineæ*. The Cryptogamic plants are rare. Between Council Bluffs and the foot of the Rocky Mountains, there are very few ferns, mosses, lichenes, or fungi, throughout what is called the prairie region. There are very few trees to be seen except those which skirt the streams, and these are mostly a species of cottonwood, *Populus angulata*. In the limestone district of the State of Missouri, the sugar maple, *Acer saccharinum*, occurs in great abundance, and disappears in Kansas. The *Acer rubrum* continues to the mountains more or less rare. On the Vermilion and Big Sioux Rivers this tree is abundant, and the Indians have made sugar from its sap. Most of the species of oak and the hickory cease in latitude 42½°. At the mouth of the Big Sioux, *Tilia Americana*, *Gymnocladus Canadensis*, *Ulmus fulva*, *Juglans nigra*, *J. cinerea*, *Celtis occidentalis*, *Gleditschia triacanthos*, occur in small quantities; and in ascending the Missouri, these trees begin to disappear, and entirely cease before reaching the mouth of White River. About one hundred miles above Council Bluffs, the last sycamore, *Platanus occidentalis*, is seen along the Missouri. It has not been observed west of that point. *Negundo aceroides Fraxinus Americana*, *Quercus macrocarpa*, two species of *Juniperus*, and certain under shrubs, as *Xanthoxylum Americanum*, *Staphylea trifoliata*, *Euonymus atropurpureus*, *Symphoricarpus vulgaris*, *Cornus sericea*, *C. stolonifera*, several species of *Vitis*, *Ribes*, *Rhus*, *Rosa*, and *Salix*, are found more or less abundant to the foot of the mountains, especially along the bottoms of the Missouri or Yellowstone. Among the shrubs bearing palatable fruit, are *Shepherdia argentea*, *Amelanchier Canadensis*, and *Prunus Virginiana*, which are universally distributed, and of great value to the wandering Indians.

Much might be said in regard to the geographical distribution of

the quadrupeds and birds of the Upper Missouri, but a few species only will be mentioned in this connection. On the prairies of Illinois, Indiana, and Iowa, the prairie hen or ruffed grouse, *Cupidonia Cupido*, is very abundant, but in ascending the Missouri River, this species gradually disappears near the mouth of the Niobrara River, and is replaced by the sharp-tailed grouse, *Pediocees phasianellus*, which continues thence to the foot of the mountains. Although the wild turkey is abundant within the limits of the settled portions of the West, it has never been seen above the mouth of White River. The quail, *Ortyx Virginiana*, is not known to occur above the mouth of the Niobrara.

The Western fox-squirrel, *Sciurus Ludovicianus*, is quite abundant about Council Bluffs, but gradually becomes rarer toward the West, until it ceases to appear near the mouth of the White River, in latitude $43\frac{3}{4}°$; longitude $99\frac{1}{2}°$. The gray and black squirrel, *S. Caroliniensis*, is common at Leavenworth City, Kansas, has been seen as far up the Missouri as the mouth of the Platte, but has never been observed farther westward. The raccoon, *Procyonlotor*, is quite abundant as far westward as Big Sioux River, where a considerable trade is carried on between the whites and Indians in their skins. None have been observed west of White River. The white-tailed or wood deer, *Cervus leucurus*, is very abundant on the wooded bottoms of the Missouri, from the mouth of the Kansas to the Big Sioux, and not rare from thence to the mountains, but it is confined to the wooded valleys of streams. On the other hand, the black-tailed or mule-deer, *C. macrotis*, is rarely seen below Fort Pierre, and its favorite haunts seem to be among the rugged and interminable ravines and cañons of the streams in the "bad-lands" and along the foot hills of the mountains. It will be seen at a glance from the few observations here made, that most animals and plants are restricted by nature within certain geographical limits. The beautiful species of rabbit, *Lepus Bairdi*, n. s., which was collected by Dr. Hayden for the first time in the spring of 1860, on the summit of Wind River Mountains, seems peculiarly adapted to dwell in these regions of perpetual snow. Its long toes, having very flexible joints, and covered with long thick hair, enables it to travel with ease over the snow, leaving behind it a track altogether out of proportion in extent, to the size of the animal. Its geographical limits are not yet well known, but it would appear to be restricted to the snow-covered summits of the mountains.

Dr. Hayden stated that he had made these remarks simply to

show the rich field of study the West opened up in the geographical distribution of its Fauna and Flora. There are also natural reasons why certain species of animals and plants are restricted to certain geographical areas, and it is his purpose to commence the accumulation of materials towards a memoir on the geographical distribution of the Fauna and Flora west of the Mississippi.

He also exhibited a photograph of matting from New Iberia, Louisiana; this matting was found in the deposits of salt near that place, which he described.

He then referred to the importance of the lignite beds of the Upper Missouri, and the value of this article as a fuel in a region where timber is rarely to be found.

New nomination No. 568 was read.

The list of surviving members was read, comprising the number, on the 1st January, 1867, of 410, of whom 262 were in the United States, and 148 in foreign countries.

No. 76 of the Proceedings of the Society was laid on the table.

And the Society was adjourned.

Stated Meeting, February 15, 1867.

Present, sixteen members.

Prof. Cresson, Vice-President, in the Chair.

Prof. Stillé and Dr. Packard, recently elected members, were introduced and took their seats.

Letters were read from J. S. Newberry, dated February 6, 1867; from George P. Dunning, February 8, 1867; Andrew Mason, dated February 8, 1867; and H. S. Osborn, February 12, 1867, severally acknowledging the receipt of the notice of their election as members and of their acceptance. And from the Physical and Natural History Society at Geneva, October 15; from the Geological Society of Glasgow, November 19; from the Bavarian Academy of Sciences, December 1, announcing donations to the Library. Also, from